

CLAIMS

1 1. An optical system comprising:
2 an optical device including a first para-electric holographic medium, said first
3 holographic medium storing a first hologram, said first hologram having a first active
4 mode, said first hologram exhibiting said first active mode when a first electric field is
5 applied to said first holographic medium, in said first active mode said first hologram
6 being adapted to direct light incident upon said first para-electric holographic medium
7 to a first location.

1 2. The optical system of claim 1, wherein said optical device is adapted to
2 selectively direct light between said first location and a second location such that said
3 optical device operates as a switch.

1 3. The optical system of claim 1, wherein in said first active mode said first
2 hologram is adapted to focus light incident upon said first para-electric holographic
3 medium to said first location.

1 4. The optical system of claim 1, wherein said first location is arranged along an
2 optical axis of said optical device; and
3 wherein said optical device includes a second hologram, said second hologram
4 having a second active mode, said second hologram exhibiting said second active
5 mode in response to a second electric field, in said second active mode said second
6 hologram being adapted to focus light incident upon said optical device to a second
7 location, said second location being arranged along the optical axis of said optical
8 device.

1 5. The optical system of claim 1, further comprising:
2 a first electrode arranged proximate to said first para-electric holographic
3 medium;
4 a second electrode arranged proximate to said first para-electric holographic
5 medium; and
6 a control system electrically communicating with said first electrode and said
7 second electrode, said control system being adapted to apply an electric potential
8 across said first electrode and said second electrode to generate said first electric field.

1 6. The optical system of claim 1, further comprising:
2 means for applying said first electric field across said first para-electric
3 holographic medium.

1 7. The optical system of claim 1, wherein said optical device includes a second
2 hologram, said second hologram having a second active mode, said second hologram
3 exhibiting said second active mode in response to a second electric field, in said
4 second active mode said second hologram being adapted to direct light incident upon
5 said optical device to a second location.

1 8. The optical system of claim 7, wherein said optical device includes a second
2 para-electric holographic medium, said second holographic medium storing said
3 second hologram.

1 9. The optical system of claim 7, wherein said first para-electric holographic
2 medium stores said second hologram.

1 10. The optical system of claim 7, further comprising:
2 a first output transmission medium optically communicating with said optical
3 device, said first output transmission medium being adapted to receive at least some
4 of the light propagated to said first location; and
5 a second output transmission medium optically communicating with said
6 optical device, said second output transmission medium being adapted to receive at
7 least some of the light propagated to said second location.

1 11. The optical system of claim 10, further comprising:
2 a first input transmission medium optically communicating with said optical
3 device, said first input transmission medium being adapted to propagate light to said
4 optical device.

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1 12. A method for selectively altering the propagation of light comprising:
2 providing a first para-electric holographic medium, the first para-electric
3 holographic medium including a first hologram, the first hologram having a first
4 active mode, in the first active mode the first hologram being adapted to direct light to
5 a first location;
6 propagating light to the first para-electric holographic medium;
7 directing light to a second location with the first para-electric holographic
8 medium;
9 setting the first hologram to the first active mode; and
10 directing light to the first location with the first hologram in the first active
11 mode, the first location being different than the second location.

1 13. The method of claim 12, wherein the first para-electric holographic medium
2 includes a second hologram, the second hologram having a second active mode, in the
3 second active mode the second hologram being adapted to direct light to the second
4 location; and
5 wherein directing light to a second location includes:
6 setting the second hologram to the second active mode; and
7 directing light to the second location with the second hologram in the
8 second active mode.

1 14. The method of claim 12, wherein directing light to the first location includes
2 focusing light to the first location.

1 15. The method of claim 12, wherein the first and second locations are arranged
2 along an optical axis of the first para-electric holographic medium.

1 16. The method of claim 15, wherein directing light to the first location comprises:
2 focusing light to the first location; and
3 wherein directing light to the second location comprises:
4 focusing light to the second location.

1 17. The method of claim 15, wherein setting the first hologram to the first active
2 mode comprises:
3 applying a first electric field across the first para-electric holographic medium.

1 18. The method of claim 15, further comprising:
2 providing a second para-electric holographic medium, the second para-electric
3 holographic medium including a second hologram, the second hologram having a
4 second active mode, in the second active mode the second hologram being adapted to
5 direct light to a third location;
6 propagating light to the second para-electric holographic medium;
7 directing light to the first location with the second para-electric holographic
8 medium;
9 setting the second hologram to the second active mode; and
10 directing light to the third location with the second hologram in the first active
11 mode, the third location being different than the second location.

1 19. The method of claim 18, wherein setting the second hologram to the second
2 active mode comprises:
3 setting the first hologram to the first active mode.

1 20. The method of claim 12, wherein the first para-electric holographic medium
2 optically communicates with a first output transmission medium and a second output
3 transmission medium; and
4 further comprising:
5 receiving at least some of the light propagated to the first location with the first
6 output transmission medium; and
7 receiving at least some of the light propagated to the second location with the
8 second output transmission medium.